

Marian Catholic High School

Physics

Email:

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PHYSICS COURSE SYLLABUS

Welcome:

Welcome to Physics at Marian High School! Please put this handout near the front of your notebook so that you may use it as a reference throughout the academic year. You may use my email address as a last resort in order to contact me with any physics-based questions. Please do not rely on this as your primary means of learning because I do not guarantee that I will check my email each day or that I will respond to your inquiry.

Expectations:

This class has been designed to be an introductory course into the field of physics. You should also have a firm grasp of Geometry and Algebra II concepts. If you begin to struggle with the mathematical concepts covered within the course, you will be expected to find extra help, as there will be little time during class to re-teach these concepts.

This course is centered on an intensely performance-based curriculum. During each unit of study, you will complete several lab experiments related to the material. Your behavior and conduct in the lab are tangible portions of your grade. Additionally, at the end of each unit, you will conduct a performance assessment in which you put what you have learned to work. You will be graded according to how well you can conduct the performance assessment.

What you will need:

1. 2 inch 3-ring binder
2. loose leaf paper
3. black/blue pens
4. pencils
5. scientific calculator, TI graphing calculator preferred
6. personal computer at home with and internet connection
7. CPO Science Text, Foundations of Physics

What you will cover

Approximate date and time

- | | | |
|------|--------------------------------------|---------|
| I. | Unit 1: Motion in 1 Dimension | 5 WEEKS |
| | a. Graphical analysis | |
| | b. Vectors | |
| | c. Velocity vs. Acceleration | |
| | d. Galileo's experiment with Gravity | |
| | e. Kinematics equations | |
| II. | Unit 2: Motion in 2 Dimensions | 4 WEEKS |
| | a. Vectors | |
| | b. Vector independence | |
| | c. Projectile motion | |
| III. | Unit 3: Newton's Laws and Force | 4 WEEKS |
| | a. Natural motion is velocity motion | |
| | b. Newton's 1 st law | |

	c. Newton's 2 nd law	
	d. Combinations systems	
	e. Newton's 3 rd law	
	f. Forces at angles	
IV.	Unit 4: Circular Motion and Universal Gravitation	3 WEEKS
	a. Horizontal and vertical circular motion	
	b. Force	
	c. Kepler's 3 laws	
	d. Newton's law of gravitation	
V.	Unit 5: Conservation	3 WEEKS
	a. Momentum	
	b. Impulse	
	c. Conservation of momentum	
	d. Work	
	e. Power	
	f. Conservation of energy and friction	
VI.	Unit 6: Oscillations and Simple Harmonic Motion	2 WEEKS
	a. Hooke's law	
	b. Ideal springs	
	c. Pendulums	
VII.	Unit 7: Waves and Sound	3 WEEKS
	a. Types of waves	
	b. Behavior of waves in boundaries	
	c. Principle of superposition	
	d. Harmonics	
VIII.	Unit 8: Geometric Optics	3 WEEKS
	a. Speed of light	
	b. Concave lenses and mirrors	
	c. Shell's law	
	d. Convex lenses and mirrors	
	e. Optical systems	
IX.	Unit 9: Light as a Wave	3 WEEKS
	a. Young's diffraction experiment	
	b. Light as a wave: polarization, interference, diffraction, and reflection	
	c. Diffraction gradients and ridged surfaces	
X.	Unit 10: Electricity and Circuits	4 WEEKS
	a. Coulomb's law	
	b. Static electricity	
	c. Ohm's law	
	d. Series and parallel circuits	
	e. Magnetic fields	
XI.	Unit 11: Modern Physics	2 WEEKS
	a. Hertz's double coil experiment	
	b. Maxwell's theory	
	c. Michelson-Morley experiment	
	d. Models of the atom	

Weighting and Categorization of Grades by Quarter:

Homework will include:

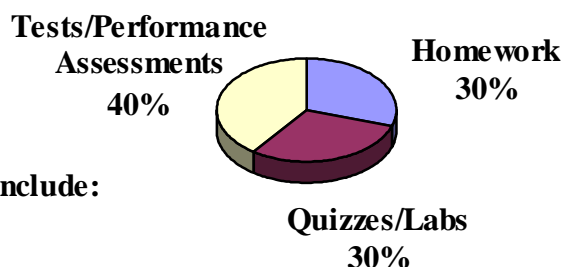
- Daily Assignments
- Problem Sets
- PPODs
- Verbal Questioning

Quizzes will include:

- Individual Quizzes
- Lab Reports
- Visual Quizzes

Tests/Performance Assessments will include:

- Unit Tests
- Unit Performance Assessments
- Projects
- Presentations



Procedure for Grading:

Homework:

1. Homework will be given primarily on a daily basis.
2. It will be collected randomly and graded according to the rubric below.
3. PPODs scores will be collected on a unit-by-unit basis. Be sure to keep all PPODs together. If you miss a PPOD due to an absence, there is no required make up work.
4. Oral questions can be graded at any time. See rubric below.
5. Problem sets will be graded according the rubric below.

Area	Advanced	Proficient	Basic	Unsatisfactory	No Evidence
Daily Work	<p style="text-align: center;">4</p> <p>1) All pieces of the assignment are attempted, 2) the work or thought process is shown and is readable, 3) work is completed in blue/black ink or pencil, and 4) your name appears in upper right corner.</p>	<p style="text-align: center;">3</p> <p>One of the aforementioned requirements is not fully satisfied or only 75 percent of the assignment is attempted.</p>	<p style="text-align: center;">2</p> <p>Two of the aforementioned requirements are not fully satisfied or only 50 percent of the assignment is attempted.</p>	<p style="text-align: center;">2</p> <p>Three of the aforementioned requirements are not fully satisfied or only 25 percent of the assignment is attempted.</p>	<p style="text-align: center;">0</p> <p>No assignment is turned in or no portion of the assignment is attempted.</p>
Oral Questions	<p style="text-align: center;">4</p> <p>Answer is complete in concept and mathematics and represents full understanding of the questions context.</p>	<p style="text-align: center;">3</p> <p>Answer is partially complete in concept or mathematics or lacks complete understanding of how the lab fits into the course.</p>	<p style="text-align: center;">2</p> <p>Answer is partially complete in mathematics but lacks a true conceptual understanding of the larger topic being addressed.</p>	<p style="text-align: center;">1</p> <p>Answer lacks specific knowledge of the concepts and mathematics involved and shows little evidence of critical thinking.</p>	<p style="text-align: center;">0</p> <p>No response or "I don't know."</p>

Quizzes:

1. The major portion of the quiz grades will be comprised from laboratory experiments. Although labs may be completed in groups, each student will hand in a final lab report that is completed independently and individually.
2. Complete all portions of the lab report that are assigned. You will be given a typical lab report format and you are expected to follow it as closely as possible.

Tests/Performance Assessments:

1. Exams will be taken individually during each unit.
1. Performance Assessments may be given at the end of each unit. Performance Assessments may be individual or group based. All group assessments will also have a significant portion that is completed by the individual student.
2. Rubrics will be handed out in advance for performance assessments, projects, and presentations so that you will know what I expect.
3. Final exams will be weighted in combination with the quarters in the semester as indicated below.

Weighting and Categorization of Grades by Semester: